

PN: JP 0010039061 AA

ICM: H01L 29/72

ICS: H01L 29/205

TI: HETEROJUNCTION \*\*\*BIPOLAR\*\*\* \*\*TRANSISTOR\*\*\*

AB: PURPOSE: To decrease recombination current to prevent diffusion of impurities between a base and an emitter, by depositing impurities having the same conductivity as that of an emitter layer into a spacer layer, thereby making the thickness of the spacer layer thin.

CONSTITUTION: On a semi-insulating substrate 1, a subcollector layer 2, a collector layer 3, a base layer 4, a spacer layer 5, a grade layer 6, an emitter layer 7 and a \*\*\*cap\*\*\* \*\*layer\*\*\* 8 are sequentially grown. A mesa is formed by etching. An emitter electrode E is formed on the \*\*\*cap\*\*\* \*\*layer\*\*\* 8. A base electrode B is

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formed on the grade layer 6, which is exposed by etching. A collector electrode C is formed on the subcollector layer 2, which is exposed by etching. The spacer layer 5 is \*\*\*doped\*\*\* so as to obtain the same conductivity type as that of the emitter layer 7. Therefore, even if impurities having the opposite conductivity type are diffused from the base layer 4, pn junctions are hard to be formed in the grade layer 6 on the emitter side or in the emitter layer 7. Thus, the thickness of the spacer layer can be made thin, recombination current can be decreased and diffusion of impurities between the base and the emitter can be prevented.

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ICP: H01L 29/737

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